

Appln No. 10/512,104  
Amdt date November 3, 2005  
Reply to Office action of July 28, 2005

### REMARKS

Reconsideration and reexamination of this application are requested.

Responsive to the action of July 28, 2005, the specification and the claims have been amended. The specification has been amended to add two clarifying words which were inadvertently omitted earlier; they present no "new matter" issues. The claims have been amended by the amendment of claim 1, the addition of claims 29 and 30 which substantively are former claims 3 and 4 (now cancelled) presented in independent form, and the cancellation of claims 5 and 6. Thus, the claims now presented are amended claim 1, original or previously presented claims 7-28, and new claims 29 and 30.

Claims 11-28 are allowed. The action of July 5, 2005 actually stated "Claims 11-27 are allowed." However, claim 28 is dependent on allowed claim 22. Therefore, it is apparent that claim 28 is allowed with its allowed parent claim.

Claims 29 and 30 are, in substance, former claims 3 and 4 rewritten to make claim 3 (new claim 29) independent, with claim 30 dependent on claim 29.

Claim 1, as originally presented, was rejected under Section 103(a) on the reference combination Shaffer et al. ('875) in view of Stoner ('558). In support of that rejection, the Office disregarded the claim introduction, citing Ex parte Masham. In disregarding the former introduction to claim 1, the Office appears not to have recognized the significance of "cartridge" as used in claim 1 to characterize the structure (article) there claimed. In the present specification and claims, "cartridge" is used, consistent with a common definition of that word, in the sense of a modular carrier of plural contact members which is insertable into some larger other structure. For the purpose of establishing that such meaning of "cartridge" is common and well accepted, attachments to this paper are copies of highlighted printouts of on-line dictionary definitions of the noun "cartridge." The dictionaries represented are The American Heritage Dictionary of the English Language: Fourth Edition, the Merriam-Webster Online Dictionary, and the Compact Oxford English Dictionary.

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While claim 1 as amended continues to be focused upon the contact cartridge, claim 1 now presents an expanded description of the context of use of the cartridge. The introduction to claim 1 states that the contact cartridge is removably insertable into an open-ended housing of a connector moiety in an electrical connection of a multi-conductor cable between a tow vehicle and a towed vehicle, and in which each cable conductor has a termination contact connected to it in the housing. The connector moiety of which the housing is a part can be a plug carried at an end of the multi-conductor cable. Moreover, the concluding subparagraph of amended claim 1 describes how the cartridge cooperates with other structure upon insertion into the connector housing; the cartridge contact members make conductive connections within the housing, at one of the cartridge, with the termination contacts on the several conductors of the cable, while the cartridge contact members at the other end of the cartridge are adjacent the open end of the housing (where they can cooperate with other contacts in a second connector moiety – such as a socket – with which the one moiety is matable).

The Section 103(a) rejection of claim 1 on the combination of Shaffer et al. '875 and Stoner '558 is flawed for several reasons. Neither reference pertains to a contact cartridge which is a modular removable component of a connector by which the working contracts (which co-act with a different connector structure can quickly be replaced as a group when appropriate. The plug 14 component of Shaffer et al.'s connection arrangement is a complete article in which (female) contact members 64 are connected directly (as by crimping) to the wires of the several conductors of cable 72. That nature of Shaffer's plug 14 means that a damaged contact 64 can be replaced only by opening the crimped connection of that contact to the associated conductor wire and by making a crimped connection of a replacement contact to that wire; that is a laborious and time consuming operation. That nature of Shaffer et al '875 is confirmed by the content of Snyder, Jr., et al. '989 which is incorporated by reference into Shaffer et al. '875 (see Col. 3, line 34) and which is cited in the enclosed IDS under 37 CFR §1.97(e)(2). In connection with the incorporation by reference of Snyder, Jr., et al '989, Shaffer et al. said (Col. 3, line 33 et seq.): "The plug member 14 is quite similar to the plug member 12 described in U.S. Pat. No. 4,109,989, the disclosure of which is incorporated herein by reference. The plug member 14 will

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be described primarily to indicate the differences between it and the standard plug member of the noted patent.” Thus, it is noteworthy that Snyder, Jr., et al., at FIG. 2, show that contacts 34 (corresponding to Shaffer et al.’s contacts 64) are connected within housing 16 directly to the ends of the respective conductors 36 of cable 38. See also Snyder, Jr., et al. at FIG. 1. Thus, Shaffer et al. ‘875 teaches away from a modular contact cartridge in which contacts carried by the cartridge body make contact with other conductive elements in the plug housing as a result of insertion of the contact cartridge into the connector housing, thereby enabling a person to replace all working contacts of a connector in a fraction of the time required to replace one contact in the connector described by Shaffer et al.

Moreover, as noted in the action of July 28, 2005, Shaffer et al. contains no disclosure pertinent to present claim 1’s descriptions that the female contact ends of applicant’s common and noncommon contact members can move laterally within the body openings in which they are located. The Office relies on Stoner to supply that deficiency of Shaffer et al. Applicant submits, for the reasons stated below, that reliance on Stoner is contrary to Stoner’s teachings and is the result of an improper hindsight view of claim 1.

Stoner ‘558 explains that deviation of female contact terminals from axial alignment with connector body passages in which those terminals are located is a problem. Such misalignment is the result of the end of the terminal being able to move laterally within the passage in which the terminal is located. In fact, in his FIG. 2 depiction of the prior art problem in the context of a coaxial connector, he shows that both plug terminal 10 and receptacle terminal 74 are out of axial alignment with the respective passages in which they are located, and that such misalignment creates problems in mating of those terminals with each other. Stoner addresses the problem by providing bushings 100 (FIGs. 1 and 6, e.g.) which can be engaged around the cables in the rearward portions of terminal mounting passages to cause the related terminals to be in axial alignment with the passages. Stoner has chosen to depict use of a bushing 100 in association with a plug terminal 10. He notes “[T]he stabilizing bushing may be used with receptacle terminals as well as plug terminals.” That comment means that misalignment of receptacle terminals is a problem which can be solved by use of bushings 100. Thus, the overall

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teaching by Stoner to a person skilled in the art is that contact misalignment in a mounting passage is a problem. Such a teaching is in a direction which is away from intentionally affording a measure of lateral movement of a female contact in a mounting passage as is set forth in claim 1.

It is apparent that neither Shaffer et al. nor Stoner provides a motivation for their combination in any way meaningful to the content of claim 1. The reference combination directs one skilled in the art away from the descriptions of claim 1. The Office's reasoning for the reference combination is reasoning which requires a knowledge of claim 1 as its stimulus, and so is hindsight reasoning of the kind prohibited by Section 103.

For the reasons set forth, the rejection of claim 1 on the combination of Shaffer et al. '875, as understood from the content of Snyder, Jr. et al. '989, in light of Stoner '558 is traversed.

With regard to claim 8, Stoner's projection 60 functions as a keying lug when plug 14 is engaged in socket 12. The plug and the socket are separate moieties of an overall electrical connection. The projection/keying lug described in claim 8 functions with the structure which carries the cable conductor termination contacts which are within the housing into which the cartridge is insertable; that housing is a component of the same connector moiety of which the cartridge becomes a further component upon its insertion into the housing.

With regard to claim 9, the diameter difference between the front end portion and the major portion of the length of the cartridge body is pertinent to the location of the front end of the cartridge body outside the open end of the housing when the cartridge is inserted into the housing. See the specification at page 13, lines 25-30, and page 18, lines 25-30. Shaffer et al. is perceived to have no disclosure which is relevant.

With respect to claim 10, the Office's understanding of Shaffer et al. (last paragraph of Part 2 of the action, at page 5) is incorrect. The opposite (left) end of Shaffer et al.'s contact 64 is a crimped connection to the metallic conductor of a relevant wire in cable 72. See Snyder, Jr., et al.

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As to claim 2, Shaffer et al. and Stoner do not teach that the opposite ends of the claimed contact cartridge form plug-type and socket-type connector features in conformity with SAE J560, in which the ends of the female contacts can move laterally within their enclosing passages. Howard '025 has been added to the combination of Shaffer et al. and Stoner in the rejection of claim 2; the Office asserts that "Howard discloses a similar connector using moieties in conformity with SAE J560", citing dependent claim 8 of the Howard patent. Applicant respectfully submits that the Office has misunderstood the content of the Howard patent, and that the Office's citation of Howard because of its mention of SAE J560 is misplaced and unwarranted in the context of claim 2.

A copy of SAE J560 is of record herein, as made clear by the attachment to the action of the July 21, 2005, namely an examiner-initialed copy of FORM PTO/SB/08A/B as completed by applicant in connection with the Information Disclosure Statement filed in this application on October 21, 2004. Since it is apparent that the Office has considered the copy of SAE J560 which is of record, the Office should appreciate that the only structure shown in Howard's FIG. 1 which conforms to SAE J560 is socket 10, i.e., the structure shown in external elevation in that FIG. 1. The contacts of socket 10 which conform to SAE J560 are not shown in that FIG. 1. The Office will understand, from its review of SAE J560, that the remaining structure shown in Howard's FIG. 1 is outside the scope of SAE J560 because that remaining structure has nothing to do with compatibility of the socket with an SAE J560 plug engageable with the socket once socket door 19 has been opened. That is, the aspects of the connector contacts 14 and 17 shown in Howard's FIG. 1, are not addressed by SAE J560 because they are outside the connection zone which is addressed by SAE J560, namely, the zone between the exteriors of a tow vehicle and a towed vehicle. Howard's contacts 14 and 17 are inside a truck tractor.

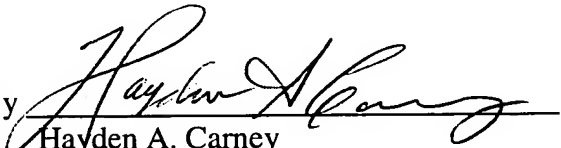
SAE J560 is silent on the topic of internal arrangements of a plug or a socket affected by it; the SAE J560 standard governs only the external aspects of plugs and sockets to assure that any plug can be mated to any socket. Claim 2 states that one end of the claimed cartridge forms a plug-type moiety substantially conforming to SAE J560 while the other end of the cartridge defines a socket-type moiety substantially conforming to SAE J560. It is apparent that when the

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cartridge is inserted into the housing of a connector governed by SAE J560, one end of the cartridge will form part of the internal structure of the connector, and in that instance the one end of the cartridge will be outside the zone to which SAE J560 applies. Therefore, neither Howard nor SAE J560 pertains to the arrangements at both of the opposite ends of a contact cartridge useful in a connector housing having external aspects governed by that standard. It follows that the combination of Shaffer et al. in light of Stoner and Howard would not have made obvious the subject matter of claim 2.

In light of the foregoing, it is submitted that all claims now presented are allowable. Should the Office, upon review of this paper, perceive that any of claims 1, 2 and 7-10 is not allowable, telephone contact by the Office with the undersigned, before issuance of a further action, is requested so that issuance of a further action can be avoided, as by the filing of a supplement to this paper.

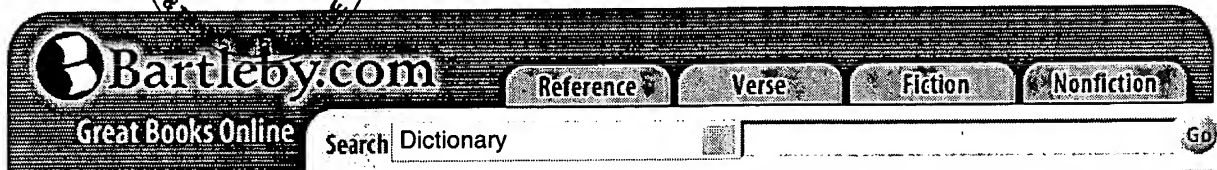
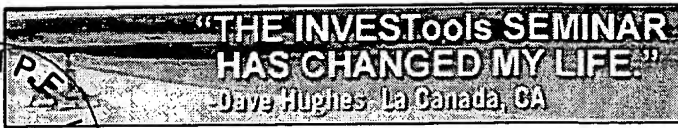
Respectfully submitted,  
CHRISTIE, PARKER & HALE, LLP

By   
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626/795-9900

HAC/jmp

Attachments: 3 dictionary definitions  
Enclosure: Information Disclosure Statement re USP 4,109,989

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The American Heritage® Dictionary of the English Language: Fourth Edition. 2000.

## cartridge

SYLLABICATION: car·tridge

PRONUNCIATION: kār'trĭj

**NOUN:** **1a.** A cylindrical, usually metal casing containing the primer and charge of ammunition for firearms. **b.** Such a casing fitted with a bullet. **c.** A similar piece of ammunition, such as a shotgun shell. **2.** A case filled with high explosives, used in blasting. **3.** A small modular unit designed to be inserted into a larger piece of equipment: an ink cartridge; a disposable cartridge of caulking compound. **4.** A removable case containing the stylus and electric conversion circuitry in a phonograph pickup. **5a.** A case containing magnetic tape in a reel; a cassette. **b.** A case containing a ribbon in a spool, for use in printers and electric typewriters. **6.** A lightproof case with photographic film that can be loaded directly into a camera.

**ETYMOLOGY:** Alteration of earlier *cartage*, alteration of French *cartouche*, from Italian *cartuccio*, variant of *cartoccio*, roll of paper. See [cartouche](#).

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cartridge

Main Entry: **car·tridge**

Pronunciation: 'kär-trij, dial 'ka-trij

Function: *noun*

Etymology: alteration of earlier *cartage*, modification of Middle French *cartouche*

: a case or container that holds a substance, device, or material which is difficult, troublesome, or awkward to handle and that usually can be easily changed: as a : a tube (as of metal) containing a complete charge for a firearm and usually an initiating device (as a primer) b : a case containing an explosive charge for blasting c : an often cylindrical container for insertion into a larger mechanism or apparatus d : CASSETTE 2 e : a small case that contains a phonograph needle and transducer and is attached to a tonearm f : a case containing a reel of magnetic tape arranged for insertion into a recorder or player g : a removable case containing a magnetic tape or one or more disks and used as a computer storage medium h : a case for holding printed circuit chips containing a computer program <a video-game *cartridge*>

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### cartridge

• **noun** 1 a container holding a spool of film, a quantity of ink, or other item or substance, designed for insertion into a mechanism. 2 a casing containing a charge and a bullet or shot for small arms or an explosive charge for blasting.

— ORIGIN variant of CARTOUCHE.

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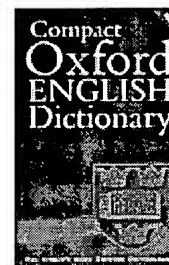
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